



PERSONNEL QUALIFICATION STANDARD

FOR

LST-1179/1183 CLASS ENGINEERING

QUALIFICATION SECTION 7

MAIN PROPULSION

PQS USER'S GUIDE
LST-1179/1183 CLASS, MAIN PROPULSION, QUAL 7

This guide will explain the Personnel Qualification Standards (PQS) Program, what it is, and how to use it.

I. WHAT IS PQS?

PQS is a part of your Command's overall training program. It provides the "minimum" requirements to qualify on a Watchstation. It is a method for qualifying officer and enlisted personnel in certain assigned duties. These duties may consist of specific Watchstations (Throttler/Burnerman), or performance as a team member (Repair Party Team).

II. WHAT IS IN PQS?

Your shipboard PQS program consists of two parts:

A. The Standard Booklet requests answers with which the trainee should be familiar and contains performance items the trainee is required to complete to qualify on a Watchstation. Contained in this booklet are sign-off sheets for Fundamentals, Systems and Watchstations for final supervisor qualification. This booklet is a working document of your PQS progress and should be maintained by the user. Standards are written by naval personnel after asking themselves "What do I need to know to do the job properly?"

The Standard booklet is made up of the following sections:

1. PQS USER'S GUIDE
2. DEFINITION OF WORDS USED IN PQS
3. CONTENTS
4. FUNDAMENTALS (100 SECTION)
5. SYSTEMS (200 SECTION)
6. QUALIFICATION CARDS
7. WATCHSTATIONS (300 SECTION)
8. FEEDBACK (CHANGE REQUEST) FORM

B. The Progress Chart shows the Watchstations to which you have been assigned and also records your progress in each Watchstation. The chart, which lists all division or work center personnel, is to be updated periodically.

A. The Standard Numbering System

Each Fundamental, System, and Watchstation is assigned a four-digit number, in some cases followed by letters. This number also appears at the top of each page for quick reference.

Example: 7206

- 7 - Indicates qualification area (7 = Engineering (Main Propulsion))
- 206 - Indicates section 2 (System section) and that it is the 6th System

NOTE: Subsections of the above number are identified by the addition of point numbers, i.e.

7206.23 The last two numbers (.23) indicate the second topic, third item in the section being covered.

B. Qualification Group Numbering System

The Watchstation section (300) is divided into qualification groups. Your book may be used for more than one final qualification such as Engineerroom Supervisor, Fireroom Supervisor, etc. Each group is indicated on a Final Qualification Sign-Off Page as follows:

Example: NAVEDTRA 43110-7Q2

- 43110 - Denotes NAVEDTRA number assigned to the PQS package
- 7 - Indicates Engineering Main Propulsion Section
- Q2 - Indicates the second qualification group

. HOW TO USE THIS BOOKLET

1. Fundamentals (100 Section) identify the basic knowledge required to do a job properly. Safety precautions that apply are also listed here. Your instructor, by asking appropriate questions as to required knowledge, and with your correct response, will sign you off on the Fundamentals and Systems Summary Page. At the end of each Fundamental and System section is a list of reference books in which the answers can be found.
2. Systems (200 Section). In systems, the equipment you are studying is broken down into functional sections that may be compared to the electrical

3. WATCHSTATIONS (300 Series) require that you perform certain demonstrating proficiency at the Watchstation for which you are qualifying. The Watchstation section is divided into final qualification "groups" (Qual 1, Qual 2, etc.) with each group containing the following:

a. Final Qualification Sign-Off Page

Final record that is filed in your service jacket and recorded on your Page 4 upon final qualification

b. Qualification Summary (Watchstation Sign-Off) Page

Record of completion for particular Watchstations within a qualification group

c. Fundamentals and Systems Summary Page

Record of completion of Fundamentals and Systems required for all Watchstations in a qualification group

d. Watchstation Task Sign-Off Pages

Record of completion of performed tasks and instruction watches required by for each Watchstation in a qualification group

V. HOW TO QUALIFY

Your division officer or work center supervisor will issue you a PQS booklet. Your supervisor will assign Watchstations and set time limits (goals) for completing your Watchstation qualification. Progress toward qualification will be monitored on the centrally located Progress Chart.

1. Open your Standard booklet to your assigned Watchstation (300 Section). At the top of the page you will find the objective and a list of prerequisites that must be completed prior to proceeding with the Watchstation tasks. In many cases a junior Watchstation will be a prerequisite and must be completed before proceeding further.

2. Complete the Safety Precautions Fundamentals first, then the rest of the required Fundamentals and Systems. Your supervisor may require you

and the answer, ask your supervisor or qualification petty officer for assistance.

VI. THE SUPERVISOR

1. As a senior petty officer, you will be required to assign junior personnel to complete specific Watchstations in PQS. When you do this, always look through the Standard booklet to determine other items that should be completed before work is started on the required Watchstations or related Fundamentals and Systems. If you are assigning more than one Watchstation or section to be completed, it is your decision to specify which one should be completed first. The supervisor is an extremely important part of PQS if it is to be successful. If you administer PQS with insight, you will find that PQS is a helpful tool that can fit into your overall training plan. You will be responsible for the accuracy, updating, and tailoring of PQS to fit your command's needs, as well as for the initiation of appropriate feedback to the PQS Development Group (feedback forms are located in the back of each Standard booklet). You should provide motivation to your personnel by assigning goals, showing interest, and following the trainees' progress. The supervisor is responsible for training and should be the one to update and maintain the progress chart. It is important that the supervisor be aware of who is and who is not progressing, as well as where counseling or individual instruction may be needed. A sample PQS progress chart can be found in the PQS Manager's Guide (NAVEDTRA 43100-1B). As a supervisor you must be totally familiar with the duties, responsibilities and assignments of your Qualification Petty Officers. Your PQS program can survive without good planning and quality control.

VII. THE QUALIFICATION PETTY OFFICER

1. Selection as a Qualification Petty Officer means that you are one of the ship's subject matter experts on those Fundamentals, Systems and Watchstations assigned to you. PQS cannot be successful without you. Your job is to be totally knowledgeable in your assigned areas, to make yourself available to check off your trainees' achievements, and to ensure a high-quality PQS program is maintained in your division.

2. Each Qualification Petty Officer should have a set of standard answers for the Watchstations for which he is responsible so that all trainees receive the same answer. If multiple signatures are required for a line item, it is preferable that one working day or one watch elapse between signatures. If the trainee does not know the correct answer, it is your responsibility to help find the answer in the reference material. This will speed up the process of qualification and will familiarize your trainees with the use of publications. Obviously this requires that you know where all the answers can be found.

3. As the Qualification Petty Officer you will be the most likely individual to discover discrepancies in the Standard booklet. Any discrepancies noted should be brought to the attention of your supervisor so that appropriate tailoring and corrections can be made. It must be understood that the PQS booklet can be tailored to fit your ship's needs. Such tailoring is to be accomplished only with approval of your Commanding Officer or a designated official.

DEFINITION OF WORDS USED IN PQS

COMPONENT - Major part of a system

COMPONENT PARTS - Major parts of components

FUNDAMENTALS - Basic facts and principles (100 Series in PQS)

PARAMETERS - Variables, such as temperature, pressure, voltage, current frequency having limits to be monitored usually shown on gauges or meters

SYSTEMS - Groups of components operating together to perform specific functions (200 Series in PQS)

SYSTEM INTERRELATIONS - (1) How outside influences affect the operation of this system, or (2) How the operation of this system affects the operation of other systems or equipment

WATCHSTATIONS - Operator qualifications (300 Series in PQS) that include duties, assignments or responsibilities an individual or group may be called on to perform (e.g., Engine room Lower Level Watch, Fire room Upper Level Watch, Console Operator)

The following personnel, under the supervision of the PQS Development Group, made a significant contribution to the development of this PQS for LST 1179/1182 Class Engineering (Qual 7).

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FTC Norfolk
USS SCHENECTADY (LST-1185)
USS TUSCALOOSA (LST-1187)
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CONTENTS

FUNDAMENTALS

7101	Mechanical
7102	Diesel Engine
7103	Power Transmission
7104	Auxiliary Boiler
7105	Distilling Plant
7106	Air-Conditioning and Refrigeration
7107	Electromechanical
7108	Engineering Administration
7109	Safety Precautions

SYSTEMS

7201	Potable Water Service and Transfer
7202	Fire and Flushing Pump
7203	Medium-Pressure (MP) Air
7204	Low-Pressure (LP)/Control Air
7205	Air-Conditioning/Chilled Water
7206	Ship's Stores Refrigeration Plant
7207	Controllable Pitch (CP) Lube Oil
7208	Ship's Service Diesel Generator (SSDG) Engine
7209	Main Propulsion Diesel Engine
7210	Main Drainage
7211	Main Shaft Bearings
7212	Main Reduction Gear
7213	Fuel Oil Service (Diesel)
7214	Main Lube Oil Transfer and Purification
7215	Seawater Cooling
7216	Pitch Control
7217	Ballast Cooling
7218	Main Propulsion Shaft
7219	Fuel Oil Service, Transfer and Stripping
7220	Air Control
7221	Auxiliary Boiler
7222	Submerged Tube Distilling Plant
7223	Lube Oil Transfer and Storage
7224	JP-5 Cargo and Transfer
7225	JP-5 Helicopter Fueling
7226	Automotive Gasoline/MOGAS

- .1 Describe the following types of drawings:
 - a. Schematic
 - b. Simple sketch
 - c. Cross section
 - d. Block diagram
 - e. Flow diagram
 - f. Phantom view
- .2 List the reference manuals or instructions used in your department.
- .3 Explain the application of the following types of pumps:
 - a. Centrifugal
 - b. Reciprocating
 - c. Rotary
 - d. Jet (eductor)
- .4 List the applications of the following equipment:
 - a. Lube oil purifier
 - b. Low-pressure (LP) air compressor
 - c. Medium-pressure (MP) air compressor
 - d. Fuel transfer pump
 - e. Lube oil transfer pump
 - f. Fire and flushing pump
 - g. Contaminated oil stripping pump
 - h. Main eductor
 - i. Coalescer filter/separator
- .5 Explain the application of the following:
 - a. Strainer
 - b. Filter
 - c. Relief valve
 - d. Pressure/regulating valve
 - e. Temperature/regulating valve
 - f. Gauges
 - g. Thermometers
 - h. Pressure alarm
 - i. Manometer
 - j. Air filter differential
- .6 Define the following as applied to shipboard engineering in LST 1179/1182 Class ships:
 - a. LP air
 - b. MP air
 - c. Suction/discharge
 - d. Flexible coupling

7101 MECHANICAL FUNDAMENTALS (CONT'D)

- .8 Describe the most vital requirements of the following:
- a. Piping
 - b. Valves

REFERENCES TO BE USED:

<u>Title</u>	<u>Pub Number</u>
1. Fireman	NAVEDTRA
2. Engineman 3 & 2	NAVEDTRA
3. Principles of Naval Engineering	NAVEDTRA
4. Naval Ships' Technical Manual, Chap 9550	NAVSEA 0901-LP-5
5. Blueprint Reading and Sketching	NAVEDTRA

- .1 Describe the following types of drawings:
 - a. Schematic
 - b. Simple sketch
 - c. Cross section
 - d. Block diagram
- .2 List the reference manuals or instructions used in your department.
- .3 Explain the principles of operation of the following:
 - a. Fuel booster pump
 - b. Fuel injection pump
 - c. Fuel injection nozzle
 - d. Turbocharger
- .4 Explain the application of the following equipment:
 - a. Lube oil pump
 - b. Jacket water pump
 - c. Raw water pump
 - d. Heat exchangers
 - e. Governor
- .5 Explain the protective functions of the following:
 - a. Governors (overspeed)
 - b. Remote shutdowns
 - c. Filters
 - d. Strainers
 - e. Gauges
 - f. Thermometers
 - g. Pyrometers
- .6 Explain the meaning of the following as applied to diesel engines:
 - a. Scavenging
 - b. Turbocharge
 - c. Prelube
 - d. Priming
 - e. Enclosed operating station (EOS) control
 - f. Local control
 - g. Pilot house control
 - h. Control air
 - i. RPM
- .7 Describe the use and handling of the following:
 - a. JP-5
 - d. Soluble oil

7102 DIESEL ENGINE FUNDAMENTALS (CONT'D)

REFERENCES TO BE USED:

	<u>Title</u>	<u>Pub Numb</u>
1.	Fireman	NAVEDTRA
2.	Engineman 3 & 2	NAVEDTRA
3.	Engineman 1 & C	NAVEDTRA
4.	Fundamentals of Diesel Engines	NAVEDTRA
5.	Blueprint Reading and Sketching	NAVEDTRA

- .1 Describe the following types of drawings:
 - a. Schematic
 - b. Simple sketch
 - c. Cross section
 - d. Block diagram
- .2 List the reference manuals or instructions used in your department.
- .3 Explain the application of the following:
 - a. Flexible coupling
 - b. Solid coupling
 - c. Reduction gears
 - d. Spur gear
 - e. Pedestal bearing
 - f. Spring bearing
 - g. Propulsion shaft
 - h. Stuffing tube
 - i. Controllable pitch propeller
 - j. Syntron seal
 - k. Inflatable boot
 - l. Pitch control unit
- .4 Define the following terms as applied to power transmission:
 - a. Inching
 - b. Feet of pitch
 - c. Stop shaft
 - d. Lock shaft
 - e. Shaft brake
 - f. Dump clutch
 - g. Clutch in
 - h. Fixed pitch
- .5 Explain the basic principles of propeller pitch.
- .6 Describe the basic operation of the following:
 - a. Fixed pitch
 - b. Variable pitch
- .7 Explain how each of the following accomplishes shaft-sealing action:
 - a. Labyrinth seal
 - b. Syntron seal
 - c. Featheredge seal

REFERENCES TO BE USED:

<u>Title</u>	<u>Pub Number</u>
1. Basic Machines	NAVEDTRA 10624
2. Naval Ships' Technical Manual, Chap 9430	NAVSEA 0901-LP-430-0012
3. Machinist's Mate 3 & 2	NAVEDTRA 10524
4. Blueprint Reading and Sketching	NAVEDTRA 10077
5. Engineman 3 & 2	NAVEDTRA 10541

- .1 Describe a piping diagram.
- .2 Explain the application of the following:
 - a. Auxiliary boiler
 - b. Steam drum
 - c. Water drum
 - d. Saddles and supports
 - e. Soot blowers
 - f. Water gauges
 - g. Water level switch
 - h. Burners
- .3 Explain the applications of the following:
 - a. Safety valves
 - b. Smokestack
- .4 Define the following terms:
 - a. Natural circulation
 - b. Forced circulation

REFERENCES TO BE USED:

<u>Title</u>	<u>Pub Number</u>
1. Boiler Technician 3 & 2	NAVEDTRA 10535
2. Engineman 3 & 2	NAVEDTRA 10541
3. Naval Ships' Technical Manual, Chap 221	NAVSEA S9086-GY-STM-000
4. Ship's Information Book	

7105 DISTILLING PLANT FUNDAMENTALS

- .1 Describe the following types of drawings:
 - a. Flow diagram
 - b. Piping diagram
- .2 Explain the application of the following:
 - a. Sterilizer
 - b. Drain cooler
 - c. Steam heater
 - d. Electric heater
 - e. Distillate cooler
 - f. Air and brine educt
 - g. Feedwater flowmeter
- .3 Explain the protective functions of the following:
 - a. Relief valve
 - b. Rupture disc
 - c. Salinity cell
- .4 Define the following as applied to distilling plants:
 - a. Evaporation
 - b. Condensation
 - c. Distillation
 - d. Vapor
 - e. Feedwater
 - f. Salinity
 - g. Brine
- .5 Explain the principle of distilling plant operation.
- .6 Explain the purpose of the following:
 - a. Heating section
 - b. Condenser
 - c. Preheater
 - d. Cooler

REFERENCES TO BE USED:

- .1 List the authoritative air-conditioning and refrigeration manuals or instructions used by your unit.
- .2 Explain the applications of the following:
 - a. Thermal-expansion valve (TXV)
 - b. Evaporator
 - c. Compressor
 - d. Condenser
 - e. Receiver
- .3 Explain the protective functions of the following:
 - a. Dehydrator
 - b. Solenoid valves
 - c. Evaporator pressure-regulating (EPR) valve
 - d. Low-pressure cutout switch
 - e. High-pressure cutout switch
 - f. Relief valve
 - g. Water-regulating valve
 - h. Water failure cutout switch
 - i. Strainers
 - j. Lube oil failure switch

REFERENCES TO BE USED:

<u>Title</u>	<u>Pub Number</u>
1. Engineman 3 & 2	NAVEDTRA 10541
2. Naval Ships' Technical Manual, Chap 510	NAVSEA S9086-RQ-STM-000
3. Fireman	NAVEDTRA 10520
4. Refrigeration and Air-Conditioning	NAVEDTRA 16163

- .1 Discuss the importance of sensing devices in electrical circuits.
- .2 Describe the functions and state the applications of the following devices:
 - a. Thermostatic switch
 - b. Mechanical switch (cam/push)
 - c. Pressure switch
 - d. Water switch
 - e. Thermostat
 - f. Float switch
 - g. Thermocouple
 - h. Ammeter
 - i. Voltmeter
 - j. Wattmeter
 - k. Tachometer
- .3 Describe the applications of the following signaling devices in electrical systems:
 - a. Bells
 - b. Buzzers
 - c. Horns
 - d. Sirens
 - e. Lamp-type indicators
 - f. Drum-type annunciators
- .4 Discuss the operation of the following protective devices:
 - a. Fuses
 - b. Overloads
 - c. Mechanical interlocks
 - d. Electrical interlocks

REFERENCES TO BE USED:

<u>Title</u>	<u>Publication</u>
1. Basic Electricity	NAVEDT 101
2. IC Electrician 3 & 2	NAVEDT 102
3. Electrician's Mate 3 & 2	NAVEDT 103

Locate and identify the following manuals:

- a. Standard Organization and Regulations of the U.S. Navy (OPNAVINST 3120.32)
- b. Engineering Department Organization and Regulations Manual (EDORM)
- c. Engineering Casualty Control Handbook

Describe your duties as defined by OPNAVINST 3120.32.

Explain the duties of the following as defined in OPNAVINST 3120.32 and EDORM:

- | | |
|------------------------------|---------------------------------|
| a. Main Propulsion Assistant | d. Engineering Training Officer |
| b. Damage Control Assistant | e. Division Damage Control |
| c. Electrical Officer | Petty Officer |

Define the Watch, Quarter and Station Bill.

State the purpose of the following schedules:

- a. Warmup/lightoff schedule
- b. Securing schedule
- c. Engineering operational sequencing system (EOSS)

REFERENCES TO BE USED:

<u>Title</u>	<u>Pub Number</u>
Standard Organization and Regulations of the U.S. Navy	OPNAVINST 3120.32
Engineering Department Organizational and Regulations Manual (EDORM)	
Fireman	NAVEDTRA 10520
Naval Ships' Technical Manual, Chap 079-V3	NAVSEA
	S9086-CN-STM-030
Chap 090	NAVSEA
	S9086-CZ-STM-000

- .1 Draw a simple diagram of machinery locations, indicating access and escape routes in your space.
- .2 Describe where safety precautions are posted on machinery and throughout the space.
- .3 Explain the equipment safety tag-out system.
- .4 Explain the significance of the color of tags used in the equipment safety tag-out system and what they mean when attached to a valve handwheel and/or controller of a pump or to a circuit breaker.
- .5 Explain the use and protective functions of the following:

a. Relief valves	h. Recirculating valve
b. Safety valves	i. Quick-closing valve
c. Lagging	j. Speed-limiting governor
d. Flange covers/shields	k. Constant-pressure regulator
e. Reach rod	l. Remote-operated controller (air/hydraulic)
f. Coupling covers	m. Valve locking device
g. Electrical light steamtight covers	
- .6 Describe the safety precautions to be observed when working with high-speed rotating machinery.
- .7 Discuss the importance of bolted deckplates, gratings and handrails.
- .8 Discuss the importance of good housekeeping practices in engine spaces.
- .9 Describe the danger of skylarking in machinery spaces.
- .10 Explain the hazards caused by improper tightening of valve bonnet packing gland nuts.
- .11 Explain the hazard of oil in the bilges.
- .12 Describe the safety precautions to be observed prior to and when

- .14 Describe the following in terms of effect on and/or hazard to valve
 - a. Short studding
 - b. Improper packing
 - c. Improper gasket
 - d. Improper type used
 - e. Crow's-foot wrenches
- .15 Describe the safety precautions to be observed when operating a compressed air system.
- .16 Describe the safety precautions to be observed when using solvents, asbestos, fiberglass insulation, refrigerants, mercury, fluorescent lamps and lead based materials.
- .17 Explain the oily waste discharge limitations as they apply to ship-board personnel.
- .18 Describe the procedures used, communications established and reports required in the event of an oil spill.
- .19 Explain the special hazard involved and procedures to be followed when working on a pressure system component.
- .20 Explain the special hazards involved and procedures to be followed when working on a system that opens to the sea.
- .21 Discuss the safety precautions to be observed and/or personnel safety equipment/devices required in the following situations as set forth in OPNAVINST 5100.19:
 - a. When working aloft (Chap 2, Sec V)
 - b. During heavy weather (Chap 2, Sec VI)
 - c. While working with paint (Chap 10, Sec IV)
 - d. While operating portable electric tools (Chap 5, Sec II)
 - e. While welding, cutting and brazing (Chap 6)
 - f. While working with workshop equipment (Chap 9, Sec I, II, III)
 - g. While handling hazardous material (Chap 10, Sec I, II, III, IV,

- .26 Discuss "man-machine interface," and the factors that affect
- .27 Discuss the Heat Stress Program (as set forth in OPNAVINST 31 and the following associated terms:
 - a. Wet bulb
 - b. Dry bulb
 - c. Radiant heat
 - d. WGBT
 - e. DEL
 - f. Safe stay time
- .28 Discuss the following programs (as set forth in OPNAVINST 31
 - a. Hearing Conservation Program
 - b. Lube Oil Quality Control Program (LOQCP)

REFERENCES TO BE USED:

<u>Title</u>	<u>Pub. Nu</u>
1. Machinist's Mate 3 & 2	NAVEDTR
2. Navy Safety Precautions for Forces Afloat	OPNAVIN
3. Principles of Naval Engineering	NAVEDTR
4. Standard Organization and Regulations of the U.S. Navy	OPNAVIN
5. Naval Ships' Technical Manual, Chap 300	NAVSEA
	300-000
	Chap 593
	NAVSEA
	593-000
6. Accident Prevention Manual	OPNAVIN

Objective: To provide an outline of facts you should know prior to performing the following watchstations: 7301, 7302 and 7305

201.1 Explain the function of the potable water service and transfer system

.11 Refer to a standard print or draw a simple sketch of this system showing all components listed below.

201.2 SYSTEM COMPONENTS AND COMPONENT PARTS

For each component and component part listed below:

- A. Discuss its function
- B. Show where it is located
- C. Describe the safety devices associated with it

.21 Potable water storage tanks

.22 Potable water manifold

.23 Vacuum priming pump

.24 Piping and valves

.25 Potable water pump

201.3 PRINCIPLES OF OPERATION

.31 Describe the flow path of potable water from the deck riser to the storage tank.

.32 Describe the flow path of potable water from the storage tank to the ship's main potable water system.

201.4 PARAMETERS

State the following as applied to the parameters listed below:

- A. Maximum and minimum allowable operating values
- B. Physical location of indicators
- C. Normal operating values

.41 Potable water pump discharge pressure

.42 Potable water pump suction pressure

.43 Vacuum priming pump suction pressure

7201

POTABLE WATER SERVICE AND TRANSFER SYSTEM (CONT'D)

REFERENCES TO BE USED:

TITLE

1. Ship's Information Book
2. Freshwater Pump

Objective: To provide an outline of facts you should know prior to performing the following watchstations: 7301 and 7302

- 2.1 Explain the function of the fire and flushing pump system.
- .11 Refer to a standard print or draw a simple sketch of this system showing all components listed below.

2.2 SYSTEM COMPONENTS AND COMPONENT PARTS

For each component and component part listed below:

- A. Discuss its function
- B. Show where it is located
- C. Describe the safety devices associated with it

- .21 Motor
- .22 Pump
 - a. Packing glands/mechanical seals
 - b. Bearings
- .23 Piping and valves
- .24 Vacuum priming pump
 - a. Valves
 - b. Priming tank
 - c. Vacuum pump
 - d. Motor
 - e. Pressure switch
- .25 Pressure gauges

2.3 PRINCIPLES OF OPERATION

- .31 Explain how the components work together to achieve the system's function.

2.4 PARAMETERS

State the following as applied to the parameters listed below:

- A. Maximum and minimum allowable values
- B. Physical location of indicators

7202.5 SYSTEM INTERRELATIONS

- .51 Describe the effects on this system due to the following
- a. Clogged sea strainer
 - b. Loss of electrical power

REFERENCES TO BE USED:

TITLE

1. Fire and Flushing Pump
2. Vacuum Priming Unit for Centrifugal Pump
3. Ship's Information Book, Vol II

PU

NA

LP

NA

LP

Objective: To provide an outline of facts you should know prior to performing the following watchstations: 7301 and 7302

- 1 Explain the function of the MP air system.
- 11 Refer to a standard print or draw a simple sketch of this system showing all components listed below.

2 SYSTEM COMPONENTS AND COMPONENT PARTS

For each component and component part listed below:

- A. Discuss its function
 - B. Show where it is located
 - C. Describe the safety devices associated with it
- 21 Air compressor (MP)
 - a. Cooling system
 - b. Motor controller
 - c. Lube oil system
 - 22 Refrigerifilter
 - a. Power switch
 - 23 Water trap
 - a. Drain valve
 - 24 Air flasks
 - 25 Piping and valves
 - a. Air compressor discharge valve
 - b. Air compressor relief valve
 - 26 Reducing station
 - 27 Cross-connect station
 - 28 Monitoring instruments

3 PRINCIPLES OF OPERATION

- 31 Explain how the components work together to achieve the system's function.

4 PARAMETERS

State the following as applied to the parameters listed below:

7203.5 SYSTEM INTERRELATIONS

- .51 Describe the effects on this system due to the following
- a. Loss of seawater
 - b. Loss of electrical power

REFERENCES TO BE USED:

- | <u>TITLE</u> | <u>PAGE</u> |
|---|-------------|
| 1. Ship's Information Book | NA |
| 2. Air Compressor, Medium-Pressure | LF |
| 3. Refrigifilter | NA |
| | LF |
| 4. Naval Ships' Technical Manual, Chap 9490 | NA |
| | LF |

Objective: To provide an outline of facts you should know prior to performing the following watchstations: 7301 and 7302

- 4.1 Explain the function of the LP/control air system.
- .11 Refer to a standard print or draw a simple sketch of this system showing all components listed below.

4.2 SYSTEM COMPONENTS AND COMPONENT PARTS

For each component and component part listed below:

- A. Discuss its function
- B. Show where it is located
- C. Describe the safety devices associated with it

- .21 Air compressor (LP)
 - a. Air compressor cooling system
 - b. Motor controller
 - c. Lube oil system
- .22 Refrigerifilter
 - a. Power switch
- .23 Water trap
 - a. Drain valve
- .24 Air flasks
- .25 Piping and valves
 - a. Air compressor discharge valve
 - b. Air compressor relief valve
- .26 Reducing station
- .27 Cross-connect station
- .28 Monitoring instruments
- .29 Control air supply panels
 - a. Supply valves
 - b. Bypass valves

4.3 PRINCIPLES OF OPERATION

- .31 Explain how the components work together to achieve the system's function.

7204.5 SYSTEM INTERRELATIONS

.51 Describe the effects on this system due to loss of electric

REFERENCES TO BE USED:

<u>TITLE</u>	<u>PUB N</u>
1. Ship's Information Book	
2. Air Compressor, Low-Pressure	NAVSE LP-02
3. Refrigifilter	NAVSE LP-02
4. Naval Ships' Technical Manual, Chap 9490	NAVSE LP-49

Objective: To provide an outline of facts you should know prior to performing the following watchstations: 7301 and 7302

- 005.1 Explain the function of the air-conditioning/chilled water system.
- .11 Refer to a standard print of this system.

005.2 SYSTEM COMPONENTS AND COMPONENT PARTS

For each component and component part listed below:

- A. Discuss its function
- B. Show where it is located
- C. Describe the safety devices associated with it

- .21 Compressor
- .22 Condenser
- .23 Receiver
- .24 Water-regulating valve
- .25 Relief valve
- .26 Piping and valves
- .27 Low-pressure switch
- .28 High-pressure switch
- .29 Dehydrator
- .210 Water failure switch
- .211 Oil failure switch
- .212 Chiller
- .213 Chilled water pump
- .214 Thermometers and gauges
- .215 Heat exchanger
- .216 Liquid level gauge
- .217 Expansion valve
- .218 Solenoid valve
- .219 Flowmeter
- .220 Expansion tank
- .221 Control panels
- .222 Seawater circulating pump

005.3 PRINCIPLES OF OPERATION

7205.4 PARAMETERS (CONT'D)

- .41 Compressor lube oil level
- .42 Condenser cooling water pressure
- .43 Compressor lube oil pressure
- .44 Chilled water temperature
- .45 Chilled water pressure

7205.5 SYSTEM INTERRELATIONS

- .51 Describe the effects on this system due to the following:
 - a. Loss of seawater
 - b. Loss of electrical power
- .52 Describe the effects on the following due to the operation of the system:
 - a. Electronic equipment
 - b. Habitability

REFERENCES TO BE USED:

<u>TITLE</u>	<u>PUB</u>
1. Air-Conditioning Plant, Chilled Water	NAVS LP-0
2. Air-Conditioning Pump, Chilled Water	NAVS LP-0
3. Ship's Information Book, Vol II	

Objective: To provide an outline of facts you should know prior to performing the following watchstations: 7301 and 7302

- 6.1 Explain the function of the ship's stores refrigeration plant system.
- .11 Refer to a standard print of this system.

6.2 SYSTEM COMPONENTS AND COMPONENT PARTS

For each component and component part listed below:

- A. Discuss its function
- B. Show where it is located
- C. Describe the safety devices associated with it

- .21 Compressor
- .22 Condenser
- .23 Receiver
- .24 Thermal-expansion valve (TXV)
- .25 Evaporator pressure regulator
- .26 Low-pressure/high-pressure switch
- .27 Strainer
- .28 Dehydrator
- .29 Evaporator coils
- .210 Relief valve
- .211 Hand-expansion valve
- .212 Piping and valves
- .213 Thermometers/gauges
- .214 Liquid level gauges
- .215 Seawater failure switch
- .216 Water-regulating valve
- .217 Thermostatic switch
- .218 Solenoid valve
- .219 Control panels
- .220 Seawater-cooling cutout valves

6.3 PRINCIPLES OF OPERATION

- .31 Explain how the components work together to achieve the system's function.

7206.4 PARAMETERS (CONT'D)

- .41 Compressor lube oil pressure
- .42 Compressor lube oil level
- .43 Cooling water pressure
- .44 Compressor discharge pressure
- .45 Compressor suction pressure

7206.5 SYSTEM INTERRELATIONS

- .51 Describe the effects on this system due to the following:
 - a. Loss of electrical power
 - b. Loss of seawater pressure

REFERENCES TO BE USED:

TITLE

1. Refrigeration Plant, Ship's Stores
2. Ship's Information Book

Objective: To provide an outline of facts you should know prior to performing the following watchstation: 7302

07.1 Explain the function of the CP lube oil system.

.11 Refer to a standard print or draw a simple sketch of this system showing all components listed below.

07.2 SYSTEM COMPONENTS AND COMPONENT PARTS

For each component and component part listed below:

- A. Discuss its function
- B. Show where it is located
- C. Describe the safety devices associated with it

.21 CP oil replenishing system

- a. Hand pump
- b. Purifier
- c. Supply and return valves
- d. Bypass valve
- e. Gravity tank drain

.22 Upper gravity tank

.23 Monitoring instruments

.24 Lower oil tank

- a. Sounding fixture

.25 Main pump

- a. Controller

.26 CP purifier system

- a. Supply and return valves
- b. Heater

.27 CP heating and circulating pump system

- a. Controllers
- b. Supply and return valves

.28 Strainer

- a. Shifting handle
- b. Strainer elements

07.3 PRINCIPLES OF OPERATION

.21 Explain how the components work together to achieve the system's

7207.4 PARAMETERS (CONT'D)

- .41 CP oil level
- .42 CP purifier discharge pressure and leakoff rate
- .43 Main pump discharge pressure

7207.5 SYSTEM INTERRELATIONS

- .51 Describe the effects on this system due to loss of e power.

REFERENCES TO BE USED:

TITLE

1. Controllable Pitch Propeller
2. Ship's Information Book

Objective: To provide an outline of facts you should know prior to performing the following watchstation: 7302

- 8.1 Explain the function of the SSDG engine system.
- .11 Draw a simple sketch of this system showing all components listed below.

8.2 SYSTEM COMPONENTS AND COMPONENT PARTS

For each component and component part listed below:

- A. Discuss its function
- B. Show where it is located
- C. Describe the safety devices associated with it

- .21 SSDG engine fuel system
 - a. Supply and return valves
 - b. Strainer
 - c. Filter
- .22 SSDG engine lube oil system
 - a. Supply and return valves
 - b. Strainer
 - c. Filter
 - d. Prelube pump
 - e. Lube oil cooler
 - f. Engine lube oil sump
 - g. Pressure regulator/relief valves
- .23 SSDG engine jacket water system
 - a. Supply and return valves
 - b. Expansion tank
 - c. Heat exchanger
 - d. Thermostatic control valve
- .24 Turbocharger/blower
- .25 Test cocks
- .26 SSDG engine starting air system
 - a. Barring gear interlock
 - b. Air start motor
 - c. Air start valve
- .27 Engine controls

7208.3 PARAMETERS

State the following as applied to the parameters listed below:

- A. Maximum and minimum allowable operating values
- B. Setpoint of alarm
- C. Physical location of indicators
- D. Normal operating values

- .31 Fuel oil pressures
- .32 Lube oil pressures
- .33 Lube oil temperatures
- .34 Jacket water pressures
- .35 Jacket water temperatures
- .36 Exhaust temperatures
- .37 Seawater pressures
- .38 Seawater temperatures
- .39 Starting air pressures
- .310 Scavenging air pressure
- .311 Engine sump level
- .312 Expansion tank level
- .313 Governor oil level

7208.4 SYSTEM INTERRELATIONS

- .41 Describe the effects on this system due to the following:
 - a. Clogged sea strainer
 - b. Clogged air intake
 - c. Blocked exhaust stock

REFERENCES TO BE USED:

- | <u>TITLE</u> | <u>PUB</u> |
|--|--------------|
| 1. Ship's Service Diesel Engine (Alco) | NAVS
LP-0 |
| 2. Ship's Service Diesel Engine (EMD) | NAVS
LP-0 |

Objective: To provide an outline of facts you should know prior to performing the following watchstation: 7302

- 9.1 Explain the function of the main propulsion diesel engine system.
- .11 Refer to a standard print or draw a simple sketch of this system showing all components listed below.

9.2 SYSTEM COMPONENTS AND COMPONENT PARTS

For each component and component part listed below:

- A. Discuss its function
- B. Show where it is located
- C. Describe the safety devices associated with it

- .21 Fuel system
 - a. Supply and return valves
 - b. Strainer
 - c. Filter
- .22 Lube oil system
 - a. Supply and return valves
 - b. Strainer
 - c. Filter
 - d. Prelube pump
 - e. EMD turbocharger prime/post prime pump
 - f. Lube oil coolers
 - g. Engine lube oil sump
 - h. Pedestal bearings
 - i. Pressure regulator/relief valves
- .23 Jacket water system
 - a. Supply and return valves
 - b. Expansion tank
 - c. Heat exchanger
 - d. Thermostatic control valves
- .24 Turbocharger
- .25 Test cocks
- .26 Starting air system
 - a. Barring gear interlock
 - b. Air start motor

7209.4 - PARAMETERS

State the following as applied to the parameters listed

- A. Maximum and minimum allowable operating values
- B. Setpoint of alarm
- C. Physical location of indicators
- D. Normal operating values

- .41 Fuel oil pressures
- .42 Lube oil pressures
- .43 Lube oil temperatures
- .44 Jacket water pressures
- .45 Jacket water temperature
- .46 Exhaust temperatures
- .47 Seawater pressures
- .48 Seawater temperatures
- .49 Starting air pressures
- .410 Control air pressures
- .411 Scavenging air pressure
- .412 Engine sump level
- .413 Expansion tank level
- .414 Governor oil level
- .415 Pedestal bearing (bull's-eye) level

7209.5 SYSTEM INTERRELATIONS

- .51 Describe the effects on this system due to the following
 - a. Clogged sea strainer
 - b. Clogged air intake
 - c. Blocked exhaust stack

REFERENCES TO BE USED:

TITLE

1. Main Propulsion Diesel Engine (Alco), Vol I

Vol II

PU
NA
LF
NA
i

7210 MAIN DRAINAGE SYSTEM

Objective: To provide an outline of facts you should know prior to performing the following watchstation: 7302

7210.1 Explain the function of the main drainage system.

- .11 Refer to a standard print or draw a simple sketch of this system showing all components listed below.

7210.2 SYSTEM COMPONENTS AND COMPONENT PARTS

For each component and component part listed below:

- A. Discuss its function
 - B. Show where it is located
 - C. Describe the safety devices associated with it
- .21 Valves
 - .22 Piping
 - .23 Eductor
 - .24 Pressure gauges
 - .25 Hydraulic remote control station
 - a. Selector valves
 - b. Hand pump
 - c. Valve position indicators

7210.3 PRINCIPLES OF OPERATION

- .31 Explain how the components work together to achieve the system function.

7210.4 PARAMETERS

State the following as applied to the parameters listed below:

- A. Maximum and minimum allowable operating values
 - B. Physical location of indicators
 - C. Normal operating values
- .41 Eductor suction pressure
 - .42 Eductor supply pressure

7210

MAIN DRAINAGE SYSTEM (CONT'D)

REFERENCE TO BE USED:

TITLE

1. Ship's Information Book, Vol II

Objective: To provide an outline of facts you should know prior to performing the following watchstation: 7302

- 1.1 Explain the function of the main shaft bearings system.
- .11 Refer to a standard print or draw a simple sketch of this system showing all components listed below.

1.2 SYSTEM COMPONENTS AND COMPONENT PARTS

For each component and component part listed below:

- A. Discuss its function
- B. Show where it is located
- C. Describe the safety devices associated with it

- .21 Sump
- .22 Oiler rings
- .23 Temperature gauge
- .24 Dipstick

1.3 PARAMETERS

State the following as applied to the parameters listed below:

- A. Maximum and minimum allowable operating values
- B. Physical location of indicators
- C. Normal operating values

- .31 Oil sump level
- .32 Oil temperature

REFERENCE TO BE USED:

TITLE

PUB NUMBER

1. Naval Ships' Technical Manual, Chap 9430

NAVSEA 0901-
LP-430-0012

7212 MAIN REDUCTION GEAR SYSTEM

Objective: To provide an outline of facts you should know to performing the following watchstation: 7302

7212.1 Explain the function of the main reduction gear system.

- .11 Refer to a standard print or draw a simple sketch of this showing all components listed below.

7212.2 SYSTEM COMPONENTS AND COMPONENT PARTS

For each component and component part listed below:

- A. Discuss its function
 - B. Show where it is located
 - C. Describe the safety devices associated with it
-
- .21 Main reduction gear
 - a. Vent fog gear
 - b. Turning gear
 - .22 Lube oil system
 - a. Sump
 - b. Attached lube oil pump
 - c. Lube oil standby pump
 - d. Oil cooler
 - e. Strainers
 - f. Piping and valves
 - .23 Seawater system
 - a. Seawater circulating pump
 - b. Piping and valves
 - c. Emergency cooling valves
 - .24 Pressure and temperature gauges

7212.3 PRINCIPLES OF OPERATION

- .31 Explain how the components work together to achieve the system function.

7212.4 PARAMETERS

State the following as applied to the parameters listed below:

2.5 SYSTEM INTERRELATIONS

- .51 Describe the effects on this system due to the following:
- Loss of electrical power
 - Loss of firemain pressure
- .52 Describe the effects on the Main Propulsion Diesel Engine System due to the operation of this system.

REFERENCES TO BE USED:

<u>TITLE</u>	<u>PUB NUMBER</u>
1. Main Reduction Gear (EMD)	NAVSEA 0941- LP-009-1010
2. Main Reduction Gear (Alco)	NAVSEA 0941- LP-042-6010
3. Main Propulsion Diesel Engine (Alco), Vol II	NAVSEA 0941- LP-024-8020
4. Naval Ships' Technical Manual, Chap 9420	NAVSEA 0901- LP-420-0002
5. Ship's Information Book, Vol I	

7213 FUEL OIL SERVICE (DIESEL) SYSTEM

Objective: To provide an outline of facts you should know to performing the following watchstation: 7302

7213.1 Explain the function of the fuel oil service (diesel) system.

- .11 Refer to a standard print or draw a simple sketch of this system showing all components listed below.

7213.2 SYSTEM COMPONENTS AND COMPONENT PARTS

For each component and component part listed below:

- A. Discuss its function
 - B. Show where it is located
 - C. Describe the safety devices associated with it
-
- .21 Valves
 - .22 Piping
 - .23 Service tank level gauges

7213.3 PARAMETERS

State the following as applied to the parameters listed below:

- A. Maximum and minimum allowable operating values
 - B. Physical location of indicators
 - C. Normal operating values
-
- .31 Fuel oil service tank level

7213.4 SYSTEM INTERRELATIONS

- .41 Describe the effects on the following due to the operation of the system:
 - a. Main Propulsion Diesel Engine System
 - b. Ship's Service Diesel Generator (SSDG) Engine System
 - c. Auxiliary Boiler System

Objective: To provide an outline of facts you should know prior to performing the following watchstation: 7302

7214.1 Explain the function of the main lube oil transfer and purification system.

- .11 Refer to a standard print or draw a simple sketch of this system showing all components listed below.

7214.2 SYSTEM COMPONENTS AND COMPONENT PARTS

For each component and component part listed below:

- A. Discuss its function
- B. Show where it is located
- C. Describe the safety devices associated with it

- .21 Lube oil purifier
 - a. Bowl assembly
 - b. Pumps
 - c. Liquid observation ports
 - d. Valves
 - e. Speed indicator
 - f. Purifier oil sump
- .22 Lube oil purifier heater
 - a. Valves
- .23 Lube oil transfer pump
 - a. Relief valves
- .24 Lube oil storage tanks
- .25 Piping and valves
 - a. Strainer
 - b. Suction/discharge manifolds
- .26 Temperature and pressure gauges

7214.3 PRINCIPLES OF OPERATION

- .31 Trace the flow path of lube oil from the engine/reduction gear oil sumps through the purifier and back to the sumps.

7214.4 PARAMETERS

State the following as applied to the parameters listed below:

7214.5 SYSTEM INTERRELATIONS

- .51 Describe the effects on this system due to loss of elect
- .52 Describe the effects on the following due to the operati
system:
 - a. Main Propulsion Diesel Engine System
 - b. Ship's Service Diesel Generator (SSDG) Engine System
 - c. Main Reduction Gear System

REFERENCES TO BE USED:

<u>TITLE</u>	<u>PURPOSE</u>
1. DeLaval Purifier	NA LP
2. Lube Oil Transfer Pump	NA LP
3. Lube Oil Purifier and Heater	NA LP
4. Ship's Information Book, Vol II	

7215 SEAWATER COOLING SYSTEM

Objective: To provide an outline of facts you should know prior to performing the following watchstation: 7302

7215.1 Explain the function of the seawater cooling system.

- .11 Refer to a standard print or draw a simple sketch of this system showing all components listed below.

7215.2 SYSTEM COMPONENTS AND COMPONENT PARTS

For each component and component part listed below:

- A. Discuss its function
- B. Show where it is located
- C. Describe the safety devices associated with it

- .21 Low and sand trap sea chests
- .22 Suction and discharge valves
- .23 Auxiliary seawater-reducing station
 - a. Adjusting device
- .24 Pressure and temperature gauges
- .25 Piping
- .26 Sea strainers
 - a. Strainer basket
 - b. Vent valve

7215.3 PRINCIPLES OF OPERATION

- .31 Explain how the components work together to achieve the system's function.

7215.4 PARAMETERS

State the following as applied to the parameters listed below:

- A. Maximum and minimum allowable operating values
- B. Physical location of indicators
- C. Normal operating values

7215.5 SYSTEM INTERRELATIONS (CONT'D)

- .52 Describe the effects on the following due to the operation of the system:
- a. Main Propulsion Diesel Engine System
 - b. Ship's Service Diesel Generator (SSDG) Engine System
 - c. Main Reduction Gear System

REFERENCES TO BE USED:

- | <u>TITLE</u> | <u>PAGE</u> |
|---|-------------|
| 1. Ship's Information Book, Vol II | |
| 2. Naval Ships' Technical Manual, Chap 9480 | |

Objective: To provide an outline of facts you should know prior to performing the following watchstation: 7303

16.1 Explain the function of the pitch control system.

.11 Refer to a standard print or draw a simple sketch of this system showing all components listed below.

16.2 SYSTEM COMPONENTS AND COMPONENT PARTS

For each component and component part listed below:

- A. Discuss its function
- B. Show where it is located
- C. Describe the safety devices associated with it

.21 Master control head (MCH) valve

.22 Lead load selection system

.23 Load balance system

.24 Manual pitch control system

.25 Propulsion control selection system

.26 Instruments and alarms

.27 Engine order telegraph system

.28 Reduction gear standby pump selection switch

.29 Shaft revolution counter

16.3 PRINCIPLES OF OPERATION

.31 Explain how the components work together to achieve the system's function.

16.4 PARAMETERS

State the following as applied to the parameters listed below:

- A. Maximum and minimum allowable operating values
- B. Physical location of indicators
- C. Normal operating values

.41 Control air signal pressures

7216.5 SYSTEM INTERRELATIONS

- .51 Describe the effects on this system due to the following:
 - a. Loss of electrical power
 - b. Loss of control air supply
 - c. Loss of main engines
 - d. Loss of reduction gear
- .52 Describe the effects on the ship's speed/maneuverability and operation of this system.

REFERENCES TO BE USED:

<u>TITLE</u>	<u>PUB</u>
1. Main Propulsion Diesel Engine (Alco), Vol I	NAVJAG LP-C
Vol II	NAVJAG LP-C
2. Ship's Control Console	NAVJAG LP-C
3. Ship's Information Book	

Objective: To provide an outline of facts you should know prior to performing the following watchstation: 7304

7217.1 Explain the function of the ballast cooling system.

- .11 Refer to a standard print or draw a simple sketch of this system showing all components listed below.

7217.2 SYSTEM COMPONENTS AND COMPONENT PARTS

For each component and component part listed below:

- A. Discuss its function
- B. Show where it is located
- C. Describe the safety devices associated with it

.21 Piping and valves

.22 Ballast tanks

7217.3 PRINCIPLES OF OPERATION

- .31 Trace the flow path of ballast cooling water from the ballast tank to the main seawater cooling system and return.

7217.4 SYSTEM INTERRELATIONS

- .41 Describe the effects on the Main Propulsion Diesel Engine System due to the operation of this system.

REFERENCES TO BE USED:

<u>TITLE</u>	<u>PUB NUMBER</u>
1. Ship's Information Book	
2. Naval Ships' Technical Manual, Chap 9480	NAVSEA 0901- LP-480-0002

7218 MAIN PROPULSION SHAFT SYSTEM

Objective: To provide an outline of facts you should know prior to performing the following watchstation: 7303

7218.1 Explain the function of the main propulsion shaft system.

- .11 Refer to a standard print or draw a simple sketch of this system showing all components listed below.

7218.2 SYSTEM COMPONENTS AND COMPONENT PARTS

For each component and component part listed below:

- A. Discuss its function
- B. Show where it is located
- C. Describe the safety devices associated with it

.21 Propulsion shafting

- a. Line shaft
- b. Intermediate shaft
- c. Stern tube shaft
- d. Makeup shaft
- e. Tail shaft

.22 Oil distribution (OD) box

- a. Valves
- b. Relief valve

.23 Control plate

- a. Yielding rod
- b. Control handle
- c. Woodward controllable pitch control unit

.24 Syntron seals

- a. Inflatable boot
- b. Nitrogen/CO2 supply bottle
- c. Pressure gauge

7218.3 PRINCIPLES OF OPERATION

- .31 Explain how the components work together to achieve the system function.

18.5 SYSTEM INTERRELATIONS

- .51 Describe the effects on this system due to the following:
 - a. Loss of air control signals
 - b. Loss of hydraulic pressure
- .52 Describe the effects on ship's speed/maneuverability due to the operation of this system.

REFERENCE TO BE USED:

<u>TITLE</u>	<u>PUB NUMBER</u>
1. Controllable Pitch Propeller	NAVSEA 0944- LP-007-2010

7219 FUEL OIL SERVICE, TRANSFER AND STRIPPING SYSTEM

Objective: To provide an outline of facts you should know to performing the following watchstation: 7304

7219.1 Explain the function of the fuel oil service, transfer and system.

.11 Refer to a standard print or draw a simple sketch of this showing all components listed below.

7219.2 SYSTEM COMPONENTS AND COMPONENT PARTS

For each component and component part listed below:

- A. Discuss its function
- B. Show where it is located
- C. Describe the safety devices associated with it

- .21 Storage tanks
- .22 Suction/discharge manifold
- .23 Strainer
- .24 Service pump
- .25 Prefilter
- .26 Day tanks
- .27 Return manifold
- .28 Separator filter
- .29 Piping and valves
- .210 Thermometers/gauges
- .211 Contaminated oil tank
- .212 Stripping pump
- .213 Eductor
- .214 Strainer
- .215 Fuel oil transfer cleavage indicating system

7219.3 PRINCIPLES OF OPERATION

- .31 Trace the flow path of fuel from JP-5 storage tanks to day
- .32 Trace the flow path of fuel from one JP-5 storage tank to (trim ship).
- .33 Trace the flow path of fuel from one day tank to another d recirculation.
- .34 Trace the flow path of contaminated oil from the contamin

19.4 PARAMETERS

State the following as applied to the parameters listed below:

- A. Maximum and minimum allowable operating values
- B. Physical location of indicators
- C. Normal operating values

- .41 JP-5 service pump discharge pressure
- .42 Prefilter differential pressure
- .43 Separator filter differential pressure
- .44 Fuel oil level
- .45 Stripping pump pressure

19.5 SYSTEM INTERRELATIONS

- .51 Describe the effects on this system due to the loss of electrical power.
- .52 Describe the effects on the following due to the operation of this system:
 - a. Main Propulsion Diesel Engine System
 - b. Ship's Service Diesel Generator (SSDG) Engine System
 - c. Auxiliary Boiler System

REFERENCES TO BE USED:

<u>TITLE</u>	<u>PUB NUMBER</u>
1. Ship's Information Book	
2. Diesel Oil Transfer Pump	NAVSEA 0947- LP-109-2010
3. Lube Oil Transfer Pump	NAVSEA 0947- LP-082-1010
4. JP-5 Separator Filter, 750 GPM	NAVSEA 0948- LP-036-7010

7220 AIR CONTROL SYSTEM

Objective: To provide an outline of facts you should know to performing the following watchstation: 7304

7220.1 Explain the function of the air control system.

- .11 Refer to a standard print or draw a simple sketch of this showing all components listed below.

7220.2 SYSTEM COMPONENTS AND COMPONENT PARTS

For each component and component part listed below:

- A. Discuss its function
 - B. Show where it is located
 - C. Describe the safety devices associated with it
-
- .21 Control air panel 1 (pilot house)
 - .22 Control air panel 2 (EOS)
 - .23 Control air panel 3 (local No. 2 engineroom)
 - .24 Control air panel 4 (local No. 1 and 3 enginerooms)
 - .25 Control air panel 5 (engine devices)
 - .26 Control air panel 6 (clutch and brake "A")
 - .27 Control air panel 7 (clutch and brake "B and C")
 - .28 Control air panel 8 (control air supply)
 - .29 Control air panel 9 (associated control components)
 - .210 Control air panel 10 (anti-single-engine inching)

7220.3 PRINCIPLES OF OPERATION

- .31 Explain how the components work together to achieve the system function.

7220.4 PARAMETERS

State the following as applied to the parameters listed below:

- A. Maximum and minimum allowable operating values
 - B. Physical location of indicators
 - C. Normal operating values
-
- .41 Speed boost supply air pressure

7220.5 SYSTEM INTERRELATIONS

- .51 Describe the effects on this system due to the following:
 - a. Loss of electrical power
 - b. Loss of air pressure
- .52 Describe the effects on ship's speed/maneuverability due to the operation of this system.

REFERENCE TO BE USED:

<u>TITLE</u>	<u>PUB NUMBER</u>
1. Main Propulsion Diesel Engine (Alco), Vol I	NAVSEA 09 LP-024-80

7221 AUXILIARY BOILER SYSTEM

Objective: To provide an outline of facts you should know to performing the following watchstation: 7304

7221.1 Explain the function of the auxiliary boiler system.

- .11 Refer to a standard print or draw a simple sketch of this showing all components listed below.

7221.2 SYSTEM COMPONENTS AND COMPONENT PARTS

For each component and component part listed below:

- A. Discuss its function
- B. Show where it is located
- C. Describe the safety devices associated with it

- .21 Soot blower
 - a. Supply valves and piping
 - b. Drains
- .22 Fuel oil assembly
 - a. Burner
 - b. Solenoid valves
 - c. Fuel oil pump
 - d. Piping and valves
 - e. Strainer
- .23 Feedwater/condensate assembly
 - a. Regulator/control valve
 - b. Feed pump
 - c. Piping and valves
 - d. Reserve feed and drain tank
 - e. Heat exchanger
- .24 Forced draft blower
- .25 Safety valves
- .26 Boiler combustion controls
- .27 Water gauge glasses
- .28 Safety hand-easing gear
- .29 Peep door
- .210 Stack smoke indicator
- .211 Surface blow piping and valves

7221.4 PARAMETERS

State the following as applied to the parameters listed below:

- A. Maximum and minimum allowable operating values
- B. Physical location of indicators
- C. Normal operating values

- .41 Boiler steam pressure
- .42 Feedwater pressure
- .43 Fuel oil pressure
- .44 Reserve feed and drain tank level
- .45 Water level

7221.5 SYSTEM INTERRELATIONS

- .51 Describe the effects on this system due to the following:
 - a. Loss of main fuel oil pressure
 - b. Loss of LP air pressure
 - c. Excessive use of steam
 - d. Loss of seawater to heat exchanger
- .52 Describe the effects on the following due to the operation of this system:
 - a. Submerged Tube Distilling Plant System
 - b. Habitability

REFERENCES TO BE USED:

<u>TITLE</u>	<u>PUB NUMBER</u>
1. Auxiliary Boiler, Vol I	NAVSEA 0951
Vol II	LP-017-6010
	NAVSEA 0951
	LP-017-6020
2. Ship's Information Book	

7222 SUBMERGED TUBE DISTILLING PLANT SYSTEM

Objective: To provide an outline of facts you should know to performing the following watchstation: 7305

- 7222.1 Explain the function of the submerged tube distilling plant.
- .11 Refer to a standard print or draw a simple sketch of the plant showing all components listed below.

7222.2 SYSTEM COMPONENTS AND COMPONENT PARTS

For each component and component part listed below:

- A. Discuss its function
 - B. Show where it is located
 - C. Describe the safety devices associated with it
- .21 Hypochlorinator/bromine system
- a. Mixing tank
 - b. Solution tank
 - c. Pickup tube
 - d. Strainers
- .22 Seawater circulating pump
- .23 Distillate pump/cooler
- .24 Drain cooler
- .25 Steam heater
- .26 Electric heater
- .27 Air/brine eductor
- .28 Feedwater flowmeter
- .29 Pressure gauges/thermometers
- .210 Distillate solenoid transfer valves
- .211 Hot-water circulation pump
- .212 Salinity panel
- .213 Waste heat piping and valves
- .214 Evaporator shell
- .215 Proportioning pumps
- .216 Piping and valves
- .217 Distillate meter

7222.3 PRINCIPLES OF OPERATION

- 31 Trace the flow path of seawater feed from the seawater

22.4 PARAMETERS

State the following as applied to the parameters listed below:

- A. Maximum and minimum allowable operating values
- B. Physical location of indicators
- C. Normal operating values

- .41 Feedwater pressure
- .42 Feedwater temperature
- .43 Distillate pressure
- .44 Evaporator shell temperature

22.5 SYSTEM INTERRELATIONS

- .51 Describe the effects on this system due to the following:
 - a. Variations in steam pressure
 - b. Variations in jacket water temperature
 - c. Variations in vacuum
- .52 Describe the effects on the following due to the operation of this system:
 - a. Auxiliary Boiler System
 - b. Potable water Service and Transfer System

REFERENCES TO BE USED:

TITLE

PUB NUMBER

- | | |
|--|----------------------------|
| 1. Hypochlorinator (Distilling Plant) | NAVSEA
0958-LP-015-5010 |
| 2. Hypochlorinator (Potable Water) | NAVSEA
0958-LP-015-6010 |
| 3. Distilling Plant Distillate Pump | NAVSEA
0947-LP-109-5010 |
| 4. Distilling Plant Hot Water Circulating Pump | NAVSEA
0947-LP-109-6010 |
| 5. Distilling Plant Saltwater Circulating Pump | NAVSEA
0947-LP-109-7010 |

7223 LUBE OIL TRANSFER AND STORAGE SYSTEM

Objective: To provide an outline of facts you should know to performing the following watchstation: 7306

7223.1 Explain the function of the lube oil transfer and storage

- .11 Refer to a standard print or draw a simple sketch of this showing all components listed below.

7223.2 SYSTEM COMPONENTS AND COMPONENT PARTS

For each component and component part listed below:

- A. Discuss its function
- B. Show where it is located
- C. Describe the safety devices associated with it

- .21 Storage tanks
- .22 Suction manifold
- .23 Lube oil transfer pump
- .24 Strainer
- .25 Discharge manifold
- .26 Piping and valves
- .27 Settling tanks
- .28 Gauges

7223.3 PRINCIPLES OF OPERATION

- .31 Explain how the components work together to achieve the function.

7223.4 PARAMETERS

State the following as applied to the parameters listed below:

- A. Physical location of indicators
- B. Normal operating values

- .41 Lube oil pump discharge pressure

7223.5 SYSTEM INTERRELATIONS

223.5 SYSTEM INTERRELATIONS (CONT'D)

.52 Describe the effects on the following due to the operation of this system:

- a. Main Propulsion Diesel Engine System
- b. Ship's Service Diesel Generator (SSDG) Engine System

REFERENCES TO BE USED:

<u>TITLE</u>	<u>PUB NUMBER</u>
1. Ship's Information Book, Vol II	
2. Lube Oil Transfer Pump	NAVSEA 0945-LP-082-20

7224 JP-5 CARGO AND TRANSFER SYSTEM

Objective: To provide an outline of facts you should know prior to performing the following watchstation: 7306

7224.1 Explain the function of the JP-5 cargo and transfer system.

- .11 Refer to a standard print or draw a simple sketch of this system showing all components listed below.

7224.2 SYSTEM COMPONENTS AND COMPONENT PARTS

For each component and component part listed below:

- A. Discuss its function
 - B. Show where it is located
 - C. Describe the safety devices associated with it
-
- .21 Piping and valves
 - .22 Thermometer/gauges
 - .23 Storage tanks
 - .24 Separator filters
 - .25 Manifold
 - .26 Transfer pump
 - .27 Pressure-reducing valve
 - .28 Hose reels
 - .29 Drain tank
 - .210 Priming pump and valves
 - .211 Relief valves

7224.3 PRINCIPLES OF OPERATION

- .31 Trace the flow path of JP-5 fuel from the storage tanks to the separator filter.
- .32 Trace the flow path of JP-5 fuel from the separator filter to the deck risers and hose reels.
- .33 Trace the flow path of contaminants from the separator filter to the drain tank.

7224.4 PARAMETERS

State the following as applied to the parameters listed below:

24.5 SYSTEM INTERRELATIONS

- .51 Describe the effects on this system due to the following:
 - a. Contaminated fuel
 - b. Loss of electrical power
- .52 Describe the effects on the JP-5 Helicopter Fueling System due to the operation of this system.

REFERENCES TO BE USED:

<u>TITLE</u>	<u>PUB NUMBER</u>
1. JP-5 Transfer Pump	NAVSEA 0947- LP-100-2010
2. JP-5 Separator Filter, 150 GPM	NAVSEA 0955- LP-015-0010
3. Vacuum Priming Unit for Centrifugal Pump	NAVSEA 0947- LP-109-4010
4. Ship's Information Book, Vol II	

7225 JP-5 HELICOPTER FUELING SYSTEM

Objective: To provide an outline of facts you should know prior to performing the following watchstation: 7306

7225.1 Explain the function of the JP-5 helicopter fueling system.

- .11 Refer to a standard print or draw a simple sketch of this system showing all components listed below.

7225.2 SYSTEM COMPONENTS AND COMPONENT PARTS

For each component and component part listed below:

- A. Discuss its function
- B. Show where it is located
- C. Describe the safety devices associated with it

- .21 JP-5 helicopter fueling service tank
- .22 Service pump
- .23 Pressure-reducing valve
- .24 Thermometer/gauges
- .25 Separator filter
- .26 Drain tank
- .27 Flowmeter
- .28 Piping and valves
- .29 Hose reels
- .210 Sight flow fittings
- .211 Stripping pump

7225.3 PRINCIPLES OF OPERATION

- .31 Trace the flow path of JP-5 fuel from the helicopter service tank to the hose reel.
- .32 Trace the flow path of recirculating JP-5 fuel to the helicopter service tank.

7225.4 PARAMETERS

State the following as applied to the parameters listed below:

- A. Maximum and minimum allowable operating values
- B. Physical location of indicators
- C. Normal operating values

7225.5 SYSTEM INTERRELATIONS

- .51 Describe the effects on this system due to the following:
 - a. Contaminated fuel
 - b. Loss of electrical power

REFERENCES TO BE USED:

<u>TITLE</u>	<u>PUB NUMBER</u>
1. JP-5 Helo Pump	NAVSEA 0947-LP-100-
2. JP-5 Separator Filter, 750 GPM	NAVSEA 0948-LP-036-
3. JP-5 Stripping Pump	NAVSEA 0947-LP-083-
4. JP-5 Separator Filter, 50 GPM	NAVSEA 0948-LP-036-
5. Ship's Information Book, Vol II	

Objective: To provide an outline of facts you should know prior to performing the following watchstation: 7306

7226.1 Explain the function of the automotive gasoline/MOGAS system.

- .11 Refer to a standard print or draw a simple sketch of this system showing all components listed below.

7226.2 SYSTEM COMPONENTS AND COMPONENT PARTS

For each component and component part listed below:

- A. Discuss its function
- B. Show where it is located
- C. Describe the safety devices associated with it

- .21 Tank
- .22 MOGAS pump
- .23 MOGAS stripping pump
- .24 Separator filter
- .25 Liquid level indicator
- .26 Relief valve
- .27 Piping and valves
- .28 Thermometers/gauges
- .29 Hose reels
- .210 Water turbine
- .211 CO2 inert system
- .212 Drain tank

7226.3 PRINCIPLES OF OPERATION

- .31 Trace the flow path of gasoline from the MOGAS tank to the separator filter.
- .32 Trace the flow path of gasoline from the separator filter to the hose reel.
- .33 Trace the flow path of gasoline from the fill connections to the tank.
- .34 Trace the flow path of gasoline from the MOGAS tank to the drain tank.

7226.4 PARAMETERS

State the following as applied to the parameters listed below:

- A. Maximum and minimum allowable operating values
- B. Physical location of indicators

226.4 PARAMETERS (CONT'D)

- .41 MOGAS pump discharge pressure
- .42 Gas temperature
- .43 Tank liquid level
- .44 CO2 pressure

226.5 SYSTEM INTERRELATIONS

- .51 Describe the effects on this system due to the following:
 - a. Variations in firemain pressure
 - b. Variations in CO2 pressure

REFERENCES TO BE USED:

<u>TITLE</u>	<u>PUB NUMBER</u>
1. JP-5 Separator Filter, 50 GPM	NAVSEA 0948-LP-036-301
2. Valve Shutoff Gasoline System	NAVSEA 0948-LP-036-401
3. Ship's Information Book	

FINAL QUALIFICATION AS
LST-1179/1182 CLASS PETTY OFFICER OF THE WATCH (POOW)

NAME _____ RATE _____

This Qualification Card is to be used as a record of satisfactory completion of the designated section of the Personnel Qualification Standard (PQS). Only specified supervisors may signify completion of applicable sections either by written and/or oral examination, or by observation of performance. The examination or checkout need not cover every item; however, a sufficient number of items should be covered to demonstrate the examinee's knowledge. Should the Supervisor "give away" their signature too easily, unnecessary difficulties can be expected in future routine operations.

This Qualification Card is a working document to be maintained by the trainee and updated to ensure awareness of the tasks remaining to be completed.

QUALIFICATION

Having observed satisfactory performance, it is recommended the trainee designated a qualified LST-1179/1182 CLASS PETTY OFFICER OF THE WATCH (POOW) (7306).

RECOMMENDED _____ DATE _____
(Supervisor)

RECOMMENDED _____ DATE _____
(Division Officer)

RECOMMENDED _____ DATE _____
(Department Head)

QUALIFIED _____ DATE _____
(Commanding Officer)

Service Record entry made this date _____

LST-1179/1182 CLASS PETTY OFFICER OF THE WATCH (POOW)

QUALIFICATION SUMMARY

PQS INDOCTRINATION

COMPLETED _____
(Training Officer/Date)

AUXILIARY STEAM PLANT WATER CHEMIST (NAVEDTRA 43127-5Q1)

COMPLETED _____
(Department Head/Date)

COLD IRON WATCH (7301)

Recommended _____
(Supervisor/Date)

Recommended _____ QUALIFIED _____
(Division Officer/Date) (Department Head/Date)

OILER/MESSENGER (7302)

Recommended _____
(Supervisor/Date)

Recommended _____ QUALIFIED _____
(Division Officer/Date) (Department Head/Date)

THROTTLEMAN (7303)

Recommended _____
(Supervisor/Date)

Recommended _____ QUALIFIED _____
(Division Officer/Date) (Department Head/Date)

AUXILIARY BOILER OPERATOR (7304)

Recommended _____
(Supervisor/Date)

LST-1179/1182 CLASS PETTY OFFICER OF THE WATCH (POOW)

FUNDAMENTALS AND SYSTEMS SUMMARY

FUNDAMENTALS

		SIGNATURE	DATE	PT
7101	Mechanical			1
7102	Diesel Engine			1
7103	Power Transmission			1
7104	Auxiliary Boiler			1
7105	Distilling Plant			1
7106	Air-Conditioning and Refrigeration			1
7107	Electromechanical			1
7108	Engineering Administration			1
7109	Safety Precautions			1
Total Points Fundamentals:				9

SYSTEMS

7201	Potable water Service and Transfer			1
7202	Fire and Flushing Pump			1

SYSTEMS (CONT'D)

SIGNATURE

7206 Ship's Stores Refrigeration Plant

7207 Controllable Pitch (CP) Lube
Oil7208 Ship's Service Diesel Generator
(SSDG) Engine

7209 Main Propulsion Diesel Engine

7210 Main Drainage

7211 Main Shaft Bearings

7212 Main Reduction Gear

7213 Fuel Oil Service (Diesel)

7214 Main Lube Oil Transfer and
Purification

7215 Seawater Cooling

7216 Pitch Control

7217 Ballast Cooling

7218 Main Propulsion Shaft

7219 Fuel Oil Service, Transfer and
Stripping

SYSTEMS (CONT'D)

7223 Lube Oil Transfer and Storage

SIGNATURE	DATE	PT
_____	_____	1

7224 JP-5 Cargo and Transfer

_____	_____	1
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7225 JP-5 Helicopter Fueling

_____	_____	1
-------	-------	---

7226 Automotive Gasoline/MOGAS

_____	_____	1
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Total Points Systems:	26
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Objective: This watchstation lists the minimum tasks you should be able to perform.

Prior to demonstrating your proficiency in these tasks, complete the following:

Fundamentals: 7101, 7106, 7107 and 7109

Systems: 7201 thru 7206

7301.1 TASKS

A. For the tasks listed below, discuss:

1. The correct procedure.
2. The indications monitored.
3. The safety precautions observed.
4. The communications and coordination established.

B. Perform the following tasks IAW EOSS/EDORM.

	SIGNATURE	DATE	PT
.11 Line up, operate and secure fire pump			1
			1
			1
.12 Line up, operate and secure potable water pump			1
			1
			1
.13 Line up, operate and secure MP air compressors			1
			1
			1
.14 Line up, operate and secure LP air compressors			1
			1
			1
.15 Monitor and record readings on air-conditioning/chilled water system			1
			1
			1

SIGNATURE

DATE

7301.17 Monitor controllable pitch upper
gravity oil tank

.18 Monitor security of engineering
spaces and machinery

7301.2 EMERGENCY CONDITIONS

A. For the conditions listed below, describe:

1. The indications received.
2. The operating limitations imposed.
3. The corrective action required.

B. Perform or simulate the corrective action IAW EOCC.

.21 Loss of firemain pressure

.22 Overheating of auxiliary
machinery

.23 Loss of LP air pressure

.24 Loss of MP air pressure

1.3 Stand four satisfactory watches under qualified supervision.

SIGNATURE	DATE	PTS
		50
		50
		50
		50
Total Points This Watchstation Including Required Fundamental and System Sections:		600

Objective: This watchstation lists the minimum tasks you should be able to perform.

Prior to demonstrating your proficiency in these tasks, complete following:

Fundamentals: 7101 thru 7103, 7106, 7107 and 7109

Systems: 7201 thru 7215

7302.1 TASKS

A. For the tasks listed below, discuss:

1. The correct procedure.
2. The indications monitored.
3. The safety precautions observed.
4. The communications and coordination established.

B. Perform the following tasks IAW EOSS/EDORM.

	<u>SIGNATURE</u>	<u>DATE</u>	<u>PT</u>
.11 Operate fire and flushing pump			
.12 Line up, operate and secure MP air compressor			
.13 Operate LP air compressor			
.14 Line up and operate seawater cooling system to and from applicable machinery			

SIGNATURE

DATE

7302.17 Line up and operate main engines
and boiler fuel oil systems

.18 Line up engine starting air
systems

.19 Line up jacket water system to
main engines and auxiliary
machinery

.110 Light off, operate and secure
SSDG engines

.111 Light off, operate and secure all
main engines

.112 Line up, operate and secure
main drainage system

.113 Record all readings on engineering
operating logs

7302.2 EMERGENCY CONDITIONS

A. For the conditions listed below, describe:

1. The indications received.
2. The operating limitations imposed.
3. The corrective action required.

7302.22 Loss of reduction gear lube oil pressure

.23 Loss of diesel engine lube oil pressure

.24 Diesel engine crankcase explosion

.25 Fire in the space

.26 Loss of jacket water pressure in main engines and/or SSDG engine

.27 Loss of electrical power

.28 Loss of seawater cooling pressure

.29 Unusual noises/vibrations in main engines

.210 Hot spring bearing

SIGNATURE

DATE

P

7302.3 (Cont'd)

SIGNATURE

DATE

Total Points This Watchstation Including
Required Fundamental and System Sections:

Objective: This watchstation lists the minimum tasks you should be able to perform.

Prior to demonstrating your proficiency in these tasks, complete following:

Watchstation: 7302

Systems: 7216 and 7218

7303.1 TASKS

A. For the tasks listed below, discuss:

1. The correct procedure.
2. The indications monitored.
3. The safety precautions observed.
4. The communications and coordination established.

B. Perform the following tasks IAW EOSS/EDORM.

	<u>SIGNATURE</u>	<u>DATE</u>	<u>PT</u>
.11 Receive control of main engines in EOS control			1
			1
.12 Fill and dump clutches on main engines			1
			1
.13 Test pitch control in manual/auto			1
			1
.14 Transfer throttle control from EOS to pilothouse			1

7303.17 Calculate average shaft counter reading

.18 Calculate average RPM from total turns

.19 Clutch in main engines on a turning shaft

.110 Clutch dump main engines on a turning shaft

.111 Maintain bell sheet

7303.2 EMERGENCY CONDITIONS

A. For the conditions listed below, describe:

1. The indications received.
2. The operating limitations imposed.
3. The corrective action required.

B. Perform or simulate the corrective action IAW EOCC.

.21 Loss of pitch control

.22 Loss of lube oil pressure on

SIGNATURE DATE

.25 Loss of fuel oil pressure on
main engines

10

10

10

7303.3 INFREQUENT OPERATIONS

A. For the operations listed below, discuss:

1. The correct procedure.
2. The indications monitored.
3. The safety precautions observed.
4. The communications and coordination established.

B. Perform or simulate the following operations IAW EOSS/EOCC.

.31 Manually operate pitch control

10

10

.32 Operate fixed-pitch, variable
speed control from EOS/pilothouse

10

10

.33 Start, stop and control speed of
main engine

10

10

.34 Operate throttles from pilothouse

10

10

7303.4 Stand four satisfactory watches under qualified supervision.

SIGNATURE

DATE

PTS

7303.4 (Cont'd)

SIGNATURE

DATE

Total Points This Watchstation Including
Required System Sections:

WATCHSTATION - AUXILIARY BOILER OPERATOR

7304

Objective: This watchstation lists the minimum tasks you should be able to perform.

Prior to demonstrating your proficiency in these tasks, complete the following:

Prerequisite: NAVEDTRA 43127-5Q1

Fundamentals: 7101, 7104 and 7109

Systems: 7217, and 7219 thru 7221

04.1 TASKS

A. For the tasks listed below, discuss:

1. The correct procedure.
2. The indications monitored.
3. The safety precautions observed.
4. The communications and coordination established.

B. Perform the following tasks IAW EOSS/EDORM.

	<u>SIGNATURE</u>	<u>DATE</u>	<u>PTS</u>
.11 Light off, operate and secure auxiliary boiler			10
			10
.12 Surface blow boiler			10
			10
.13 Blow tubes on boiler			10

7304.2 EMERGENCY CONDITIONS (CONT'D)

B. Perform or simulate the corrective action IAW EOCC.

	<u>SIGNATURE</u>	<u>DATE</u>
.21 Low water in boiler		
.22 High water in boiler		
.23 Water in fuel oil		
.24 Loss of fuel oil suction		
.25 Loss of electrical power		
.26 Flareback		
.27 Ruptured fuel oil line		
.28 Ruptured tube		

7304.3 INFREQUENT OPERATIONS

A. For the operations listed below, discuss:

1. The correct procedure.
2. The indications monitored.
3. The safety precautions observed.
4. The communications and coordination established.
5. The conditions that require this infrequent operation.

B. Perform or simulate the following operations IAW EOSS/EOCC.

	<u>SIGNATURE</u>	<u>DATE</u>	<u>PTS</u>
.31 Operate auxiliary boiler in manual			10
			10
.32 Steam boiler with high salinity			10
			10

7304.4 Stand four satisfactory watches under qualified supervision.

<u>SIGNATURE</u>	<u>DATE</u>	<u>PTS</u>
		50
		50
		50
		50

Total Points This Watchstation Including
Required Fundamental and System Sections:

570

Objective: This watchstation lists the minimum tasks you should be able to perform.

Prior to demonstrating your proficiency in these tasks, complete the following:

Fundamentals: 7101, 7105 and 7109

Systems: 7201 and 7222

7305.1 TASKS

A. For the tasks listed below, discuss:

1. The correct procedure.
2. The indications monitored.
3. The safety precautions observed.
4. The communications and coordination established.

B. Perform the following tasks IAW EOSS.

	<u>SIGNATURE</u>	<u>DATE</u>	<u>PTS</u>
.11 Line up distilling plant for steam/ electric operation			10
			10
.12 Light off and operate distilling plant			10
			10
.13 Secure distilling plant			10
			10
.14 Line up distilling plant distillate for distribution			10

SIGNATURE

DATE

7305.17 Chemically treat distilling plant
using proportioning pump

.18 Line up hypochlorinator for
chlorination of potable water

.19 Line up ship's service potable
water system

7305.2 EMERGENCY CONDITIONS

A. For the conditions listed below, describe:

1. The indications received.
2. The operating limitations imposed.
3. The corrective action required.

B. Perform or simulate the corrective action IAW EOCC.

.21 High chlorides

.22 Loss of 50 PSI auxiliary steam

.23 Broken flowmeter glass

.24 Loss of electrical power

A. For the operations listed below, discuss:

1. The correct procedure.
2. The indications monitored.
3. The safety precautions observed.
4. The communications and coordination established.
5. The conditions that require this infrequent operation.

B. Perform the following operations IAW EOSS/EOCC.

	<u>SIGNATURE</u>	<u>DATE</u>	<u>P</u>
.31 Feed from firemain	_____	_____	_____
	_____	_____	_____
.32 Chemically treat distilling plant using vacuum drag	_____	_____	_____
	_____	_____	_____
.33 Transfer waste heat	_____	_____	_____
	_____	_____	_____

7305.4 Stand four satisfactory watches under qualified supervision.

<u>SIGNATURE</u>	<u>DATE</u>	<u>P</u>
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

Total Points This Watchstation Including
Required Fundamental and System Sections:

Objective: This watchstation lists the minimum tasks you should be able to perform.

Prior to demonstrating your proficiency in these tasks, complete the following:

Watchstations: 7301 thru 7305

Fundamental: 7108

Systems: 7223 thru 7226

7306.1 TASKS

A. For the tasks listed below, discuss:

1. The correct procedure.
2. The indications monitored.
3. The safety precautions observed.
4. The communications and coordination established.

B. Perform the following tasks IAW EOSS.

	SIGNATURE	DATE	PTS
.11 Monitor preparation of engineroom operating logs			10
			10
.12 Maintain engineroom equipment status board			10
			10
.13 Supervise and control operation of engineroom			10
			10

SIGNATURE

DATE

7306.21 Loss of governor control

.22 Loss of standby pitch pump

.23 Loss of inching control

.24 Overheated spring bearings

.25 Overheated reduction gear pinion
gear

.26 Unusual engine noise/vibration

.27 Malfunctioning clutch assembly

.28 Malfunctioning turbocharger

.29 Contaminated fuel

	10
	10
.212 Cylinder not firing	10
	10

6.3 INFREQUENT OPERATIONS

A. For the operations listed below, discuss:

1. The correct procedure.
2. The indications monitored.
3. The corrective action required.

B. Perform or simulate the following operations IAW EOSS/EOCC.

.31 Conduct underway economy run	10
	10
.32 Conduct underway full-power run	10
	10
.33 Conduct main engine emergency clutch start	10
	10
.34 Operate control air supply panel bypass	10
	10
.35 Line up ballast cooling system	10
	10

7306.4 Stand four satisfactory watches under qualified supervision

SIGNATURE

DATE

Total Points This Watchstation Including
Required Fundamental and System Sections:

Personnel Qualification Standard
Information Report and Suggestion Sheet
PQS DEVGRU AUTOVON 957-5367

From _____ DATE _____

Activity _____

Mailing Address _____

AUTOVON # _____

Qual Standard Affected _____ NAVEDTRA # _____

Section Affected _____

Page # _____

Date Commenced Qual _____ Date Completed Qual _____

Remarks/Recommendations (Use additional sheets if necessary)

Suggestions for improving this Qual Standard

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